

REMARKS

I. General Remarks

Claims 1-13, 15-17, 32-37, and 39-44 were pending in the present application. A Restriction Requirement previously made final is withdrawn in the current Office Action and thus Claims 1-44 are now pending. Claim 20 is cancelled without prejudice in this response. The current Office Action raises the following issues:

- Claim 28 is objected to under 37 C.F.R. § 1.75(c) as being of improper dependent form for failing to further limit the subject matter of the previous claim; and
- Claims 1-44 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,909,034 to Soldavini et al. (hereinafter “*Soldavini*”) in combination with Published U.S. Patent Application No. 2005/0116013 to Kwark et al. (hereinafter “*Kwark*”) and U.S. Patent No. 5,165,590 to Cini et al. (hereinafter “*Cini*”) and Published U.S. Patent Application No. 2005/0212604 to Cyr et al (hereinafter “*Cyr*”).

II. Claim Amendments

Claims 12, 32, and 44 are amended, and claim 20 is canceled without prejudice herein. More specifically, claim 12 is amended to recite “wherein said first one and said second one of said at least two pins are electrically coupled together to form a common electrical node” (newly added language shown underlined). This clarifies that the at least two pins are electrically coupled together to form a common electrical node. Support for this amendment can be found throughout the specification, including for example FIGURE 1 (see pins 108 and 109 that are electrically coupled together to form a common electrical node) and paragraphs 0027-0034 of the specification.

Claim 32 is amended to recite “resonant tank circuitry implemented in a package that provides a plurality of interface means that are electrically coupled together to form an electrically common interface” (newly added language shown underlined). This clarifies that the plurality of interface means are electrically coupled together to form an electrically common interface. Support for this amendment can be found throughout the specification, including for example FIGURE 1 (see pins 108 and 109 of package 102 that are electrically coupled together to form an electrically common interface) and paragraphs 0027-0034 of the specification.

Claim 44 is amended to recite “wherein said first one pin and said neighboring pin are electrically coupled together to form a common electrical node” (newly added language shown underlined). This clarifies that the first one pin and neighboring pin are electrically coupled together to form a common electrical node. Support for this amendment can be found throughout the specification, including for example FIGURE 1 (see pins 108 and 109 that are electrically coupled together to form a common electrical node) and paragraphs 0027-0034 of the specification.

III. Claim Objection under 37 C.F.R. § 1.75(c)

Claim 28 is objected to under 37 CFR § 1.75(c) as being of improper dependent form for failing to further limit the subject matter of the previous claim. Specifically, Claim 28 is objected to as failing to limit the claims any more than Claim 20. Claim 20 has been cancelled without prejudice herein, and therefore this objection is now moot.

IV. Claim Rejections Under 35 U.S.C. § 103

Claims 1-44 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Soldavini* in combination with *Kwark* and *Cini* and *Cyr*. Applicant respectfully traverses these rejections below.

To establish a *prima facie* case of obviousness, three basic criteria must be met. *See* M.P.E.P. § 2143. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the combination of references must teach or suggest all the claim limitations. Without conceding any other criteria, Applicant respectfully asserts that the combination of references fails to teach or suggest all the limitations of claims 1-19 and 21-44, and insufficient motivation exists for combining the references in the manner applied by the Office Action, as discussed further below.

Independent Claim 1

Independent claim 1 recites:

An integrated circuit comprising:
internal circuitry;
package having at least two pins;
a first carrier communicatively coupling said internal circuitry with a
first one of said at least two pins, wherein said first carrier carries a signal of a
first polarity;
a second carrier communicatively coupling said internal circuitry with
said first one of said at least two pins, wherein said second carrier carries a
signal of a polarity opposite said first polarity;
a third carrier communicatively coupling said internal circuitry with a
second one of said at least two pins, wherein said third carrier carries a signal
of said first polarity; and
a fourth carrier communicatively coupling said internal circuitry with
said second one of said at least two pins, wherein said fourth carrier carries a
signal of a polarity opposite said first polarity.

As discussed below, the applied references fail to teach or suggest all elements of claim 1, and insufficient motivation exists to combine the references in the manner applied by the Office Action.

The Office Action relies upon *Soldavini* as teaching the recited first and second carriers coupled to the first pin (citing carriers 44a and 44b coupled with pin 27 in figure 3 of *Soldavini*) and third and fourth carriers couple to the second pin (citing carriers 44a and 44b coupled with pin 30 in figure 3 of *Soldavini*). See of the Office Action at page 3. The Office Action states that *Soldavini* teaches that the carriers “have polarity, but fail to teach the carriers coupled to the same pin have opposite polarity.” The Office Action asserts that *Kwark* teaches that coupling of carriers having opposite polarity reduces the effective impedance, and thus concludes that it would have been obvious to have carriers or bonding wires coupling to a pin having opposite polarity in the device of *Soldavini* to achieve the benefit of reducing the effective impedance. Applicant respectfully disagrees as discussed below.

As discussed in the previous response dated February 23, 2006 (hereinafter “previous response”) and further below, *Soldavini* provides a device in which a common signal is carried from a node to a pin. The signal is carried from the node to the pin using two parallel

wires in order to reduce resistivity and increase current capacity. As was explained in the previous response, this is analogous to implementing a highway having two lanes for traffic flowing in one direction so as to reduce the “resistivity” along the highway in such direction. *Cini* similarly explains that where multiple bond wires are used to couple an integrated circuit to an external pin, a greater amount of current may be transmitted in one direction. *See Cini* at col. 2 lns. 9-15. Thus, *Soldavini* teaches that in order to take advantage of the teachings, the two wires coupled to a common pin must carry signals having the same polarity.

Kwark describes configurations of bond wires for “single-ended signals” (where the signal has one component that is compared to a ground reference) and for differential signals (“i.e., signals of opposite polarity”). For single-ended signals, *Kwark* teaches placing one wire carrying the signal in close proximity to another wire carrying the ground reference. *See Kwark* at [0031]. For differential signals, *Kwark* teaches placing the two wires carrying the differential signal in close proximity to each other. *See Kwark* at [0046]. However, *Kwark* does not teach or suggest that the adjacent bonding wires carrying signals of opposite polarity would be coupled to a common pin. More specifically, in Figure 4, *Kwark* teaches using a pair of ribbon bonds in differential signaling, where the ribbon bonds connect to microstrips 403 and contact pads 406. *See Kwark* at [0058]. Note that each ribbon bond originates from and connects to a separate contact point – there are two microstrips and two contact pads such that the two ribbon bonds originate and terminate at different points.

The Office Action asserts that *Kwark* teaches a configuration that reduces effective impedance. The Office Action then asserts that it would have been obvious to one of ordinary skill in the art to combine the teachings of *Kwark* with *Soldavini* in order to achieve the benefit of reduced effective impedance. However, the Office Action has failed to identify any motivation to combine. As explained above, the Examiner must identify some motivation in the references themselves or in the knowledge available to one of ordinary skill in the art. See M.P.E.P. § 2143. Here, the Office Action has just identified a benefit of *Kwark*, but has not identified any motivation for applying that benefit to the teachings of *Soldavini*. As the Office Action asserts on pages 11 and 12, the prior art motivation may be different than the motivation of the Applicant. However, the Office Action must still point to some motivation, not merely recite an advantage. *Soldavini* and *Kwark* teach disparate techniques for designing wire bonds to address disparate problems. While it may be possible

to combine the two techniques, neither *Kwark* nor *Soldavini* teaches any such motivation and the Office Action has not identified any. By simply identifying component parts and describing the advantage for each component part, the Office Action has engaged in impermissible hindsight reconstruction. *See In re Fina*, 5 USPQ2d 1596, 1600 (Fed. Cir. 1988).

Even if one were motivated to combine the teaching of *Kwark* with that of *Soldavini*, one would *not* construct the claimed apparatus. As mentioned above, the two wires that are coupled to a common pin in *Soldavini* do not have opposite polarity, but are instead two parallel transmissions of a single-ended signal from a single node. The signal is split in parallel in *Soldavini* to reduce resistivity (e.g., make a two-lane highway with traffic flowing in the same direction) and increase current capacity. Thus, in the nomenclature of *Kwark*, *Soldavini* teaches a single-ended signal that has been split in parallel onto two bonding wires. If one were motivated to combine the teaching of *Kwark* with that of *Soldavini*, one would apply the singled-ended signal teachings of *Kwark* to the configuration of *Soldavini*. Thus, one would place a bond wire (or a pair of bond wires) carrying the ground reference in close proximity to the bond wires carrying the single-ended signal in parallel where the two signal-carrying bond wires terminate at one pin and the ground bond wire(s) terminates at another pin. Such a configuration is different than the configuration of Claim 1 in two respects. First, Claim 1 involves transmission of signals with two polarities, not a single-ended signal and a ground signal. Second, Claim 1 claims two pairs of carriers, each pair carrying signals of opposite polarity coupling to a single pin.

Further, *Cini* and *Cyr* are not relied upon for resolving the above deficiencies of *Soldavini* and *Kwark*, nor do they do so. Accordingly, in view of the above, the rejection of claim 1 should be withdrawn.

Independent Claim 18

Independent Claim 18 recites:

A method comprising:

coupling a first carrier from an internal resonant frequency circuitry of an integrated circuit to an electrically common interface of the integrated circuit's package, wherein said first carrier is arranged to carry signals of a first polarity;

coupling a second carrier from said internal resonant frequency circuitry of said integrated circuit to said electrically common interface of the integrated circuit's package, wherein said second carrier is arranged to carry signals of a polarity opposite said first polarity; and

coupling a third carrier from said internal resonant frequency circuitry of said integrated circuit to said electrically common interface of the integrated circuit's package, wherein said third carrier is arranged to carry signals of said first polarity.

The applied combination fails to teach or suggest all elements of claim 18. As discussed above with claim 1, the combined teachings of *Soldavini* and *Kwark* fail to teach or suggest a coupling a first, second, and third carrier to an electrically common interface where the first and third carrier carry signals of a first polarity and the second carrier carries a signal of an opposite polarity. *Cini* and *Cyr* are not relied upon as teaching this element, nor do they do so. As further discussed above with claim 1, one of ordinary skill in the art would not be motivated to combine the teachings of *Kwark* with *Soldavini* in the manner applied by the Office Action.

In view of the above, the rejection of claim 18 should be withdrawn.

Independent Claim 32

Independent claim 32, as amended herein, recites:

A system comprising:

resonant tank circuitry implemented in a package that provides a plurality of interface means that are electrically coupled together to form an electrically common interface;

first coupling means for communicatively coupling said resonant tank circuitry to one of said plurality of interface means, wherein said first coupling means carries a signal of a first polarity; and

second coupling means for communicatively coupling said resonant

tank circuitry to one of said plurality of interface means, wherein said second coupling means carries a signal of polarity opposite said first polarity.

The applied combination fails to teach or suggest all elements of claim 32. As discussed above, neither *Soldavini* nor *Kwark* teaches or suggests a plurality of interface means that are electrically coupled together to form an electrically common interface. The Office Action asserts, on page 5 thereof that *Soldavini*'s pins 27, 30 provide a plurality of interface means that are electrically coupled together. Applicant respectfully submits that the pins 27, 30 are not electrically coupled together so as to form an electrically common interface. Rather, the pins 27 and 30 provide disparate interfaces that output disparate signals at any given time. Further, one of ordinary skill in the art would not be motivated to combine the teachings of *Soldavini* with *Kwark* for the reasons discussed above. Additionally, neither *Cini* nor *Cyr* are relied upon for resolving the above deficiencies of *Soldavini* and *Kwark*, nor do they do so.

Thus, the rejection of claim 32 should be overturned.

Independent Claim 39

Independent claim 39 recites:

A system comprising:
internal circuitry implemented in a package that provides a plurality of pins;

a first plurality of carriers communicatively coupling said internal circuitry to a first one of said plurality of pins, wherein said first plurality of carriers are used as inductors for said internal circuitry, and wherein at least one of said first plurality of carriers carries a signal of a first polarity and at least one other of said first plurality of carriers carries a signal of polarity opposite said first polarity;

a second plurality of carriers communicatively coupling said internal circuitry to a neighboring pin of said first one of said plurality of pins, wherein said second plurality of carriers are used as inductors for said internal circuitry, and wherein at least one of said second plurality of carriers carries a signal of said first polarity and at least one other of said second plurality of carriers carries a signal of polarity opposite said first polarity; and

said first plurality of carriers and said second plurality of carriers arranged to interleave the polarities of signals carried thereby.

The applied combination fails to teach or suggest all elements of claim 39. As discussed above with claim 1, the combined teachings of *Soldavini* and *Kwark* fail to teach or

suggest a first and second plurality of carriers that are coupled to a common pin which carry signals of opposite polarity. As further discussed above with claim 1, one of ordinary skill in the art would not be motivated to combine the teachings of *Kwark* with *Soldavini* in the manner applied by the Office Action. Additionally, neither *Cini* nor *Cyr* are relied upon for resolving the above deficiencies of *Soldavini* and *Kwark*, nor do they do so.

Thus, the rejection of claim 39 should be overturned.

Dependent Claims

Each of dependent claims 2-17, 19, 21-31, 33-38, and 40-44 depends, either directly or indirectly, from one of independent claims 1, 18, 32, and 39 (and thus inherits all limitations of its respect independent claim). In view of the above, Applicant respectfully submits that independent claims 1, 18, 32, and 39 are of patentable merit. It is respectfully submitted that dependent claims 2-17, 19, 21-31, 33-38, and 40-44 are allowable at least because of their dependency from their respective independent claims for the reasons discussed above.

V. Conclusion

In view of the above, applicant believes the pending application is in condition for allowance.

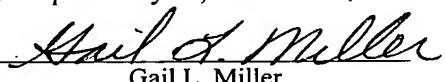
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Dated: July 26, 2006

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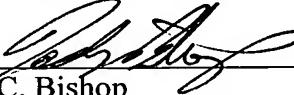
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